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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,533	07/26/2006	Alexey Vitalievich Ryzhykh	42P24165	9662

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Blakely sokoloff Taylor & Zafman
12400 Wilshire Boulevard
7th Floor
Los Angeles, CA 90025

EXAMINER	
NICKERSON, JEFFREY L	

ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
12/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,533	RYZHYKH, ALEXEY VITALIEVICH	
	Examiner	Art Unit	
	JEFFREY NICKERSON	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 June 2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *29 August 2006, 13 August 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Application No. 10/587,533 filed nationally on 26 July 2006 and internationally on 31 May 2006. The preliminary amendment, which provides change to the specification, is hereby acknowledged. Claims 1-20 have been examined.

Information Disclosure Statement

2. The IDS dated 13 August 2007 has an invalid document number (applicant: Pandya, Ashish). The examiner has cited what is believed to be the correct document in the accompanying PTO-892 form. Please check for accuracy.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 330 (Figure 3).

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be

labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. **The objection to the drawings will not be held in abeyance.**

Claim Objections

4. Claims 12-14 are objected to because they depend on a claim of different statutory class. Appropriate correction is required.

Regarding claims 12-14, these claims make claim to a method, when, in fact, they depend on a system. It appears to be a minor typographical mistake and that these claims should instead be directed to a system, further refining the operations of the machine-readable instructions.

Claim Rejections – 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3, 5-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (US 5,289,470), and further in view of Lee (US 2006/0227799 A1).

Regarding claim 1, Chang teaches a method comprising:

determining that a buffer has insufficient size to transfer data (Chang: Figure 2; col 1, lines 11-66);

provisioning a larger buffer (Chang: Figure 2; col 1, lines 11-66); and

wherein a buffer is a larger buffer (Chang: Figure 2; col 1, lines 11-66).

Chang does not teach wherein the buffer is a pre-registered RDMA buffer; or

transferring the data to a network using the buffer.

Lee, in a similar field of endeavor, teaches wherein the buffer is a pre-registered RDMA buffer (Lee: [0003]); and

transferring the data to a network using the buffer (Lee: [0003]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Lee for using an RDMA system. The teachings of Lee, when implemented with the Chang system, will allow one of ordinary skill in the art to adjust buffer sizes as needed, in an RDMA environment. One of ordinary skill in the art would be motivated to utilize the teachings of Lee with the Chang system in order to apply the buffer technique to commonly used networking environments.

Regarding claim 3, the Chang/Lee system teaches wherein said determining comprises comparing a size of the data to a predetermined threshold (Chang: col 1, lines 11-66).

Regarding claim 4, the Chang/Lee system teaches further comprising comparing sizes of a plurality of elements of an input-output vector (incoming packet stream) to the predetermined threshold (Chang: col 1, lines 11-66 provides that all incoming packets compared to buffer threshold sizes; Lee: Figure 5A for outgoing buffer queue).

Regarding claim 5, the Chang/Lee system teaches wherein said provisioning comprises allocating and registering the larger RDMA buffer during a communication phase (Chang: col 1, lines 11-66 for larger buffer; Lee: [0003]-[0004] for allocating and registering during communication).

Regarding claim 6, the Chang/Lee system teaches wherein said provisioning comprises:

unregistering the pre-registered RDMA buffer (Lee: [0025]); and

freeing the memory used by the pre-registered RDMA buffer (Lee: [0025]).

Regarding claim 7, the Chang/Lee system teaches wherein said transferring comprises:

copying data from a source to the larger RDMA buffer (Lee: Figure 5A, [0036], [0083]-[0086]); and

performing an RDMA transfer from the larger RDMA buffer to the network (Lee: Figure 5A; [0085]-[0087]).

Regarding claim 8, this article of manufacture claim contains limitations found within claims 1, 3, and 5, and the same rationale of rejection is used, where applicable.

Regarding claim 10, this article of manufacture claim contains limitations found within in claim 7, and the same rationale of rejection is used, where applicable.

7. Claims 2, 9, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (US 5,289,470), in view of Lee (US 2006/0227799 A1), and in further view of Kato (US 4,805,168).

Regarding claim 2, the Chang/Lee system teaches:

wherein a receiver readies itself to receive data by provisioning a larger RDMA buffer to receive the data (Chang: col 1, lines 11-66; Lee: [0004]).

The Chang/Lee system does not teach further comprising:

sending a control message indicating that a receiver is to ready itself to receive the data; or

prior to said transferring, receiving an acknowledgement message indicating the receiver has readied itself to receive the data.

Kato, in a similar field of endeavor, teaches further comprising:

sending a control message indicating that a receiver is to ready itself to receive the data (Kato: col 5, lines 26-39); and

prior to said transferring, receiving an acknowledgement message indicating the receiver has readied itself to receive the data (Kato: col 5, lines 26-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Kato for using transfer setup □ignaling. The teachings of Kato, when implemented in the Chang/Lee system, will allow one of ordinary skill in the art to instruct the destination to enlarge their buffer sizes, and receive a ready signal from the destination once they are done. One of ordinary skill in the art would be motivated to utilize the teachings of Kato in the Lee/Chang system in order to avoid overwhelming an intended receiver or writing to memory before it is correctly allocated, causing data corruption.

Regarding claim 9, this article of manufacture claim contains limitations found within claim 2, and the same rationale of rejection is used, where applicable.

Regarding claim 15, this method claim contains limitations found within claims 1 and 2, and the same rationale of rejection is used, where applicable.

Regarding claim 16, this method claim contains limitations found within claim 2, and the same rationale of rejection is used, where applicable.

Regarding claim 17, this method claim contains limitations found within claim 5, and the same rationale of rejection is used, where applicable.

Regarding claim 18, this method claim contains limitations found within claim 6, and the same rationale of rejection is used, where applicable.

Regarding claim 19, this method claim contains limitations found within claim 7, and the same rationale of rejection is used, where applicable.

8. Claims 11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (US 5,289,470), in view of Lee (US 2006/0227799 A1), and in further view of Official Notice.

Regarding claim 11, this system claim contains limitations found within that of claim 1 and the same rationale of rejection is used, where applicable; and further comprising:

an interconnect (Chang: Figure 1, item 30);

one or more processors coupled with the interconnect (Chang: Figure 1, item 80);

a memory coupled with the interconnect to store data (Chang: Figure 1, item 10);

a network interface device coupled with the interconnect to transfer data to a network using an Ethernet protocol (Chang: Figure 1, item 40; col 3, lines 60 – col 4, line 4).

The Lee/Chang system does not teach wherein the memory is a dynamic random access memory.

An official notice is taken that such use of DRAM as a type of memory was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize these known teachings for using DRAM. These known teachings, when implemented with the Chang/Lee system, will allow one of ordinary skill in the art to use DRAM as their memory. One of ordinary skill in the art would be motivated to utilize these known teachings in the Chang/Lee system in order to enable practicing the invention.

Regarding claim 13, this system claim contains limitations found within claims 3, 5, and 7, and the same rationale of rejection is used, where applicable.

Regarding claim 14, the Chang/Lee system teaches wherein the pre-registered RDMA buffer has a size ranging from 100 to 2000 bytes (Chang: Figure 2); and

wherein the provisioned RDMA buffer has a size ranging from 1000 to 200,000 bytes (Chang: Figure 2).

9. Claims 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al (US 5,289,470), in view of Lee (US 2006/0227799 A1) and Official Notice, and in further view of Kato (US 4,805,168).

Regarding claim 12, the Chang/Lee/ON system teaches:

wherein a receiver readies itself to receive data by provisioning a larger RDMA buffer to receive the data (Chang: col 1, lines 11-66; Lee: [0004]).

The Chang/Lee/ON system does not teach further comprising:

sending a control message indicating that a receiver is to ready itself to receive the data; or

prior to said transferring, receiving an acknowledgement message indicating the receiver has readied itself to receive the data.

Kato, in a similar field of endeavor, teaches further comprising:

sending a control message indicating that a receiver is to ready itself to receive the data (Kato: col 5, lines 26-39); and

prior to said transferring, receiving an acknowledgement message indicating the receiver has readied itself to receive the data (Kato: col 5, lines 26-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Kato for using transfer setup □ignaling. The teachings of Kato, when implemented in the Chang/Lee/ON system, will allow one of ordinary skill in the art to instruct the destination to enlarge their buffer sizes, and receive a ready signal from the destination once they are done. One of ordinary skill in the art would be motivated to utilize the teachings of Kato in the Lee/Chang/ON system in order to avoid overwhelming an intended receiver or writing to memory before it is correctly allocated, causing data corruption.

Regarding claim 20, this method claim contains limitations found within claim 11, and the same rationale of rejection is used, where applicable; and further comprising:

a processor having multiple cores (ON: Multiple core processors were well known in the art at the time the invention was made. Obvious to enable practicing the invention).

Cited Pertinent Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Creemer (US 6,014,727) discloses dynamically adjusting receiver buffer sizes based on monitored incoming data chunk sizes.

b. Eydelman et al (US 2001/0051972 A1) discloses a sender probing a receiver to determine the receiver buffer size for decision making in RDMA'ing.

c. Gale et al (US 6,038,621) discloses buffer management of I/O cards by a central manager, including adjusting buffer size.

d. Nogradi (US 5,974,518) discloses a system for adaptively adjusting buffer sizes based on monitored frame characteristics.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY NICKERSON whose telephone number is (571)270-3631. The examiner can normally be reached on M-Th, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. N./
Jeffrey Nickerson
Examiner, Art Unit 2442

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2442